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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/501,049

07/09/2004

Mikko Kokkonen

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32294

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03/28/2008

SQUIRE, SANDERS & DEMPSEY L.L.P.

8000 TOWERS CRESCENT

14TH FLOOR

TYSONS CORNER, VA 22182-2700

EXAMINER

WANG, TED M

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/501,049	<b>Applicant(s)</b> KOKKONEN, MIKKO	
	<b>Examiner</b> Ted M. Wang	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 38-75 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 38-75 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2004 and 13 December 2007 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/13/2007 has been entered.

### ***Response to Arguments***

2. Applicant's arguments, filed on 12/13/2007, with respect to the rejection(s) of claim(s) 12/13/2007 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Dowling et al. (US 6,782,036).

### ***Drawings***

3. The drawings are objected to because there are no labels for blocks 101, 103, 105, 108 and 110 in Fig.2, 201, 205, 207, 209 and 217 in Fig.3 and 301, 302, 304, and 306-311 in Fig.4. These blocks need to have descriptive labels under 37 CFR 1.84(n) and 1.84(o). For example, in Fig.2, "stream divider" may be used for the label of block 101 and "Upconverter" may be used for the label of block 103<sub>a</sub>-103<sub>N</sub>, ...etc.; and in Fig.3, "Receiving Buffer or buffer" may be used for the label of block 201; and in Fig.4,

“Receiving Buffer or buffer” may be used for the label of block 301, ...etc.; and “Stream ordering” may be used for the label of block 302, ...etc.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 38-75 are rejected under 35 U.S.C. 112 second paragraph, because there is insufficient antecedent basis for this limitation in the claim.

- ❑ Claims 38-51, 53, 54, 56 and 75, the limitation "the estimate" in line 10 as recited is indefinite for this limitation in the claim since it is not clear that "the estimate" is referred to --- an estimate of at least two of said plurality of signals --- as recited in line 7, or --- an estimate of a first one of said signal --- as recited in line 8, or --- an estimate of a second one of said signals --- as recited in line 8-9.
- ❑ Claims 52 and 55, the limitation "the estimate" in line 9 as recited is indefinite for this limitation in the claim since it is not clear that "the estimate" is referred to --- an estimate of at least two of said plurality of signals --- as recited in line 6, or --- an estimate of a first one of said signal --- as recited in line 7, or --- an estimate of a second one of said signals --- as recited in line 7-8.
- ❑ Claims 57-74, the limitation "the estimate" in line 10 as recited is indefinite for this limitation in the claim since it is not clear that "the estimate" is referred to --- an estimate of at least two of said plurality of signals --- as recited in line 6, or --- an estimate of a first one of said signal --- as recited in line 8, or --- an estimate of a second one of said signals --- as recited in line 8-9.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 38 are rejected under 35 U.S.C. 102(e) as being anticipated by Dowling et al. (US 6,782,036).

□ With regard claim 38, Dowling et al. discloses comprising:

a plurality of receiving elements (Fig.1 element 105) each of which is configured to receive a composite signal including at least some of said plurality of signals (column 5 lines 56-66, where the sensors 105 are capable of receiving 900 MHz signals or may operate at any frequency of the electromagnetic spectrum. Since the sensors are receiving signals from air, it is clear that the received signals comprising a composite signal including at least some of said plurality of signals plus noise and receive said plurality of signals at the same time.), wherein the receiver receives said plurality of signals at the same time (Fig. 1 elements 105, column 5 lines 56-66, where the sensors 105 are capable of receiving 900 MHz signals or may operate at any frequency of the electromagnetic spectrum. Since the sensors are receiving signals from air, it is

clear that the received signals comprising a composite signal including at least some of said plurality of signals plus noise and receive said plurality of signals at the same time.); and

processor (Fig.1 element 130) configured to receive said plurality of receiving elements composite signal and providing an estimate of at least two of said plurality of signals (column 7 lines 41-53, Fig.2 element 225 output  $y_i^{(j)}$ /240 output  $d_i^{(j)}$ ), said processor is configured to provide an estimate of a first one of said signals and then-to provide an estimate of a second one of said signals (where the estimated first one of said signals is  $y_1^{(j)}/d_1^{(j)}$ , and the estimated first one of said signals is  $y_2^{(j)}/d_2^{(j)}$ ), wherein said processor is configured, for each already determined estimate, to extend the estimate with a plurality of potential values (column 13 line 1 – column 14 line 64,  $w_i^{(j)}$ , *where j is the adaptation iteration index and l is the block index.*), wherein said estimate of said second one of said signals takes into account the estimate of the first signal (Fig.2 elements 235, 255, 225, 245, 250, where the estimated second signal is based on the estimated first signal due to the feedback operation, column 11 line 41 – column 12 line 47 and  $y_1^{(j)}/d_1^{(j)}$ ,  $y_2^{(j)}/d_2^{(j)}$ , *where j is the adaptation iteration index*) and the estimate of the first signal is modified in dependence on the estimate of the second signal (Fig.2 elements 235, 255, 225, 245, 250, where the estimated first signal is modified based on the estimated second signal due to the feedback operation, column 11 line 41 – column 12 line 47 and  $y_1^{(j)}/d_1^{(j)}$ ,  $y_2^{(j)}/d_2^{(j)}$ , *where j is the adaptation iteration index*).

- With regard claim 39, Dowling et al. further discloses wherein said processor is configured to provide an initial estimate of said plurality of signals, said processor using said initial estimate as a first value for said first and second estimates (column 12 line 30 – column 13 line 34, where the first value is considered as the  $w_0^{(0)}$  or  $x_0^{(0)}$ ).
- With regard claim 46, Dowling et al. further discloses wherein said plurality of potential values comprises potential values for a currently estimated signal (column 12 line 30 – column 13 line 34, where the potential values are considered as the  $w_r^{(j)}$ ).
- With regard claim 56, Dowling et al. further discloses wherein said receiving elements comprise antennas (Fig.1 elements 105).
- With regard claim 57, which is a method claim related to claim 38, all limitation is contained in claim 38. The explanation of all the limitation is already addressed in the above paragraph.
- With regard claim 58, which is a method claim related to claim 39, all limitation is contained in claim 39. The explanation of all the limitation is already addressed in the above paragraph.
- With regard claim 65, which is a method claim related to claim 46, all limitation is contained in claim 46. The explanation of all the limitation is already addressed in the above paragraph.

- With regard claim 75, which is a mean plus function claim related to claim 38, all limitation is contained in claim 38. The explanation of all the limitation is already addressed in the above paragraph

### ***Conclusion***

8. Reference(s) US 6,048,928 and US 5,822,380 are cited because they are put pertinent to the channel estimation in multiple antennas system. However, none of references teach detailed connection as recited in claim.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M. Wang whose telephone number is 571-272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Ted M Wang/  
Primary Examiner, Art Unit 2611



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